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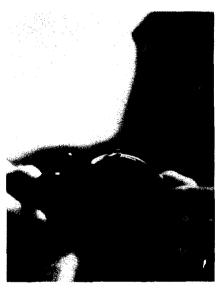
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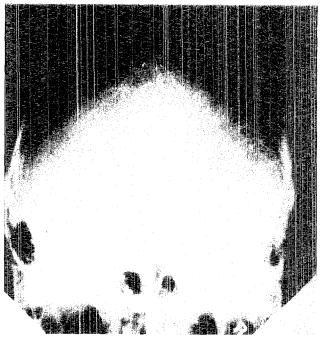
COVER:

The cover photograph is a closeup of a new electrosurgical tool, developed at the Los Alamos Scientific Laboratory and used in major surgery in Albuquerque hospitals, taken by Bill Jack Rodgers of Group ISD-7. The new surgical tool is used to cauterize and cut blood vessels. For more information, see the story that begins on page six.

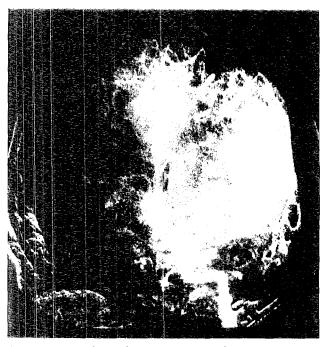
What a Little

Image Enhancement

Can Do



The radiograph at left, submitted by Lovelace Clinic, is of a human skull after a radio-opaque dye was injected to



illuminate vessels in the brain. The radiograph was enhanced, right, by subtracting bone structure of the skull.

The phrase "image enhancement" refers to anything done to an image to make it more useful to a viewer. One of the most common practitioners is the photographer who, with filters and special papers, can control contrast in a photograph made from an improperly exposed negative. By "dodging" or "burning" he can lighten or darken portions of it.

Now, with the aid of high-speed computers and special display devices, images are being enhanced to a much greater extent than is possible with darkroom procedures. Methods have been developed at several research institutions, including the Los Alamos Scientific Laboratory, to improve the clarity of photographs in which desired details are obscured or in which the image is blurred or out of focus. While there is yet a lot to be learn-

ed about computer-based image enhancement, members of LASI. Groups C-5 and M-2 are successfully applying the process to improving detail in flash radiographs of explosions, and they are expanding enhancement techniques to include a wide range of other basic research and practical applications.

Image processing can be from either a negative or a transparency. The various densities—black, white and shades of gray—in the image are converted to digital information on a magnetic tape. This information is processed in a computer, resulting in a "corrected" tape which is played back to produce the enhanced photograph.

Interest in image enhancement at LASL was triggered by Don Janney, alternate M-2 group leader. "Several years ago it came to my attention that the Jet Propulsion

Laboratory in Pasadena had done an interesting image-enhancement project in connection with one of NASA's unmanned lunar landings," said Janney. "At Pasadena, I was shown the original photograph. There was so much degradation during transmission that, photographically, the picture was terrible. The enhanced version which appeared in the press, however, was very good. JPL had enhanced the picture until a simultaneously transmitted test pattern looked good, which also made the rest of the picture look good.

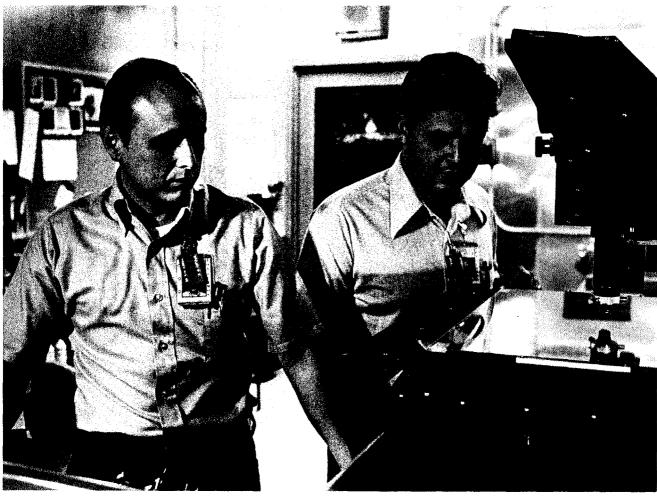
"Our work at M-2 has to do with flash radiography. We study the behavior of explosives and their effects on materials, and, also, technology applicable to radiography in general. Obtaining high-resolution radiographs from the PHER-

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Discussing image-enhancement processing at Group M-2 are Don Janney, alternate group leader, Rosemary O'Connor, M-2, and Fred Parker, M-DO.



Dick Bagley and Eugene Sandoval, both of M-2, operate scanning/playback equipment used by M-2 for processing PHERMEX radiographs and digitizing photographs.

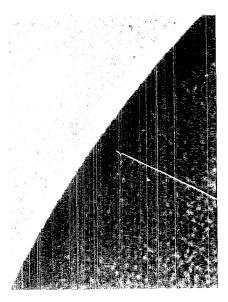


MEX accelerator is difficult because of intensity limitations of its x-ray beam. We must often sacrifice quality for speed. Intensity and explosively caused motion are the two main reasons why we need an image-enhancement system. We often have to make precise measurements. It's difficult if the image is smeared.

"When I returned from Pasadena, I talked with our group leader at the time, Doug Venable (now alternate M-Division leader), about the idea of acquiring an image-enhancement system for our radiographs. He was enthusiastic about the prospects, but he realized that we would need help from outside our group before we could implement it. We needed help with theory which could best be given by someone versed in the vast body of literature on sound and electric signals—how to extract meaningful from unmeaningful signals-to determine which concepts could be applied to image processing. We also needed help in the formulation of efficient computer programs. Venable talked the problem over with Keith Zeigler (C-5 group leader) who agreed to involve his group in the project."

Together, members of Group C-5 and M-2 conducted a study to determine the feasibility of digital image enhancement and the extent to which the process could be applied in Laboratory programs, using the high-speed computers in LASL's Central Computer Facility. Initially the digitizing and reproduction of images for trial and demonstration was done at the let Propulsion Laboratory. These services at JPL permitted LASL scientists to develop computer programs and to explore the utility of image enhancement.

From the study it was concluded that digital image enhancement could serve a valid role in programs at the Laboratory. "By removing a degrading influence from a photograph, more information can be extracted from experiments, not only from current experiments



Above left is an original radiograph of a hollow metal spherical shell. By putting it through an "edge sharpening" routine, wall boundaries of the shell were made clearer (below left). Arrow indicates the inner surface of the shell. Enhancement made possible more precise measurement of deformation of walls due to stress.

but from those in past years as well," said Bob Hunt of C-5.

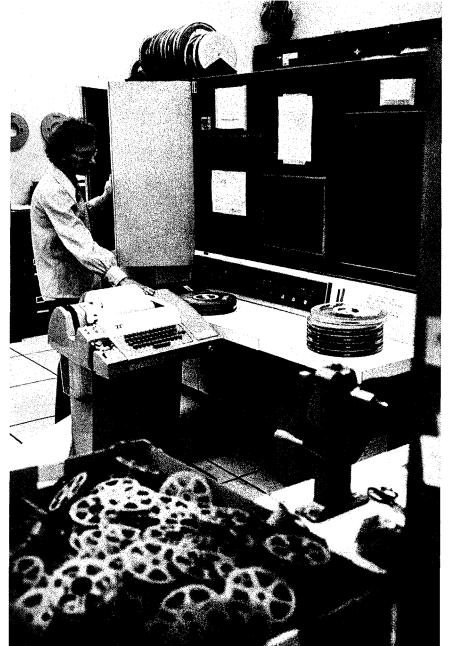
The study also led to the purchase of equipment by M-2 for digitizing and reconstructing images. The equipment is used by M-2, which is responsible for its own applications, and is shared with C-5, which is providing research and computer programming services for M-2 and other Laboratory groups.

"Image digitizing is done on the M-2 equipment," said Hunt, "and pictures can also be reconstructed on the same machine. However, a new capability in image display has recently been provided by the FR-

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Viewing images enhanced on the FR-80 are Keith Zeigler, C-5 group leader, and Joe Trussell and Bob Hunt, both of C-5. Trussell was responsible for programming subtraction technique used on Lovelace Clinic radiographs.



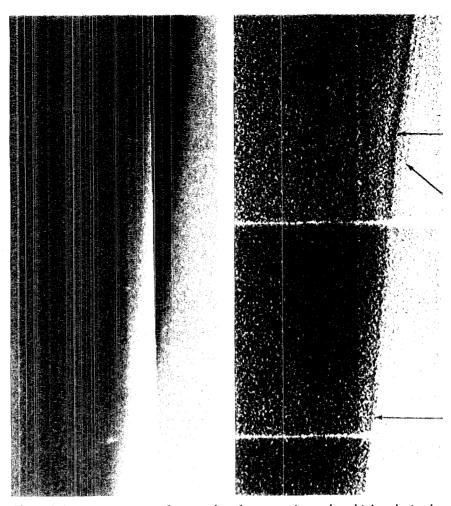


Patricia Snider, C-1, operates the highresolution FR-80 microfilm plotter used in image processing at LASL's Central Computer Facility. 80, a high-resolution microfilm plotter in the Central Computer Facility, which produces images on 35mm film. The scanning/playback device at M-2 has very high precision and can generate images on film as large as 15 inches square. But, it is slower and requires that we carry a magnetic tape of information out to M-2. The FR-80, on the other hand, is very fast and is directly accessible in the CCF. For example, it takes about 15 seconds of computer time to generate a magnetic tape for the FR-80, starting with a tape from the M-2 equipment. The FR₂80 can generate an image from this tape in four to five minutes.

"There are advantages to both image display systems," said Hunt. "The M-2 equipment is superior in resolution and ability to handle a wide variety of film sizes. The FR-80 in the CCF gives us a high-quality 'quick-look' capability for images on 35mm film.

"We've been producing quality enhanced images on the FR-80 for only a few months, but reception of the process by technical groups has been good. We've enhanced radiographic images produced in medicine, physics experiments and non-destructive testing."

Hunt noted that radiographs of a person's head were processed for the Lovelace Clinic in Albuquerque to help determine the feasibilty of using image-enhancement techniques to detect brain tumors. "The Lovelace Clinic submitted two radiographs-one of the skull before a radio-opaque dye was injected and another of the skull after the dye had been injected to illuminate the vessels in the brain. The degrading influence here was the bone structure of the skull which obscured a part of the brain. The radiographs were enhanced by subtracting the bone structure from the image. We're also working on some radiographs for the Los Alamos Medical Center to see if image enhancement can be used to diagnose the onset of breast cancer. Neither of these projects is far

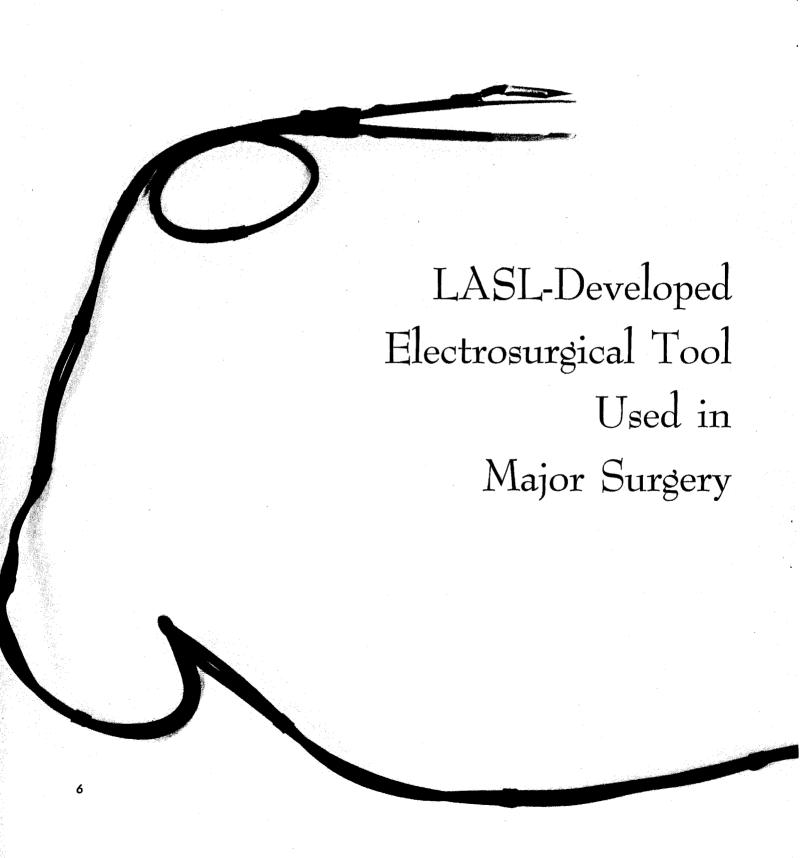


Above left is an exposure of a metal surface, accelerated to high velocity by chemical explosives, taken at less than one-millionth of a second by a high-speed framing camera. The enhanced version of the photograph (above right) clearly showed a break (top arrow) in the metal surface (bottom arrow), and air shocks (middle arrow). Both phenomena are important in M-2's study of detotations.

enough along yet to draw any conclusions."

Janney noted that radiographs of reactor fuel elements have also been enhanced at LASL. "The process has profound implications for rapid screening of reactor fuel elements for flaws in the element or its protective cladding. From the standpoint of safety, image processing can be used to discern whether the condition of an element is such that its use can be continued or that it should be terminated and sent to a reprocessing plant."

"The image-enhancement process is not limited to black and white negatives and transparencies," said Hunt. "It can also be applied to color, although we haven't demonstrated this capability yet. We're working on many advanced techniques now, and color is one of the next steps. The combination of the computing power in the LASL CCF and display devices, such as the FR-80 and the M-2 scanner/playback, make possible image-enhancement techniques that are unique in the world."

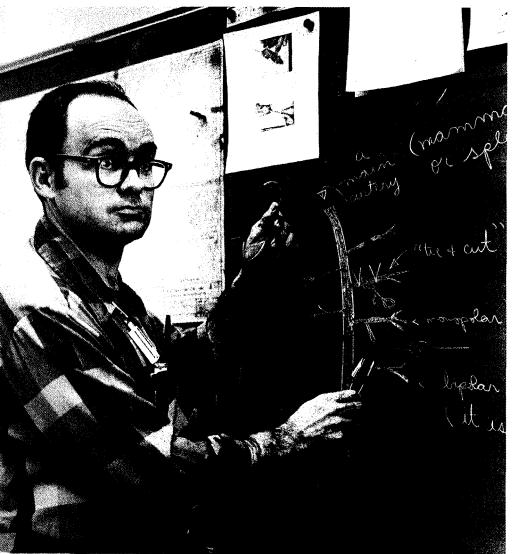


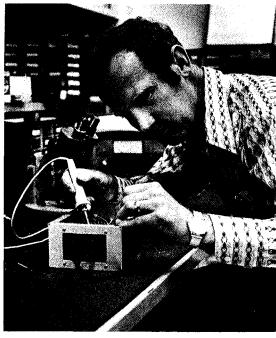
When a surgeon must sever a blood vessel the usual procedure is to clamp it at two points close together, cut it between these points, and then seal the cut ends by coagulating the blood. This sequence can become a very time-consuming portion of an operation when many vessels must be cut. However, a new, relatively simple surgical tool now being used in two Albuquerque hospitals allows cutting and cauterizing almost simultaneously, thereby drastically reducing the time normally required for some operations.

Known as the electrosurgical coagulating-cutting forceps, this tool was developed by Danny Doss and Bill McCabe of Group MP-3 at the Los Alamos Scientific Laboratory in cooperaton with Dr. Sterling Edwards at the University of New Mexico School of Medicine. Group MP-3 is responsible for developing practical applicatons of LAMPF and LAMPF technology. Knowledge of MP-Division personnel of high-frequency power devices led to the exploration of more efficient use of radio-frequency power in biological applications, including the electrosurgical coagulating-cutting forceps. Work on the device is funded by the Atomic Energy Commission's Division of Physical Research and supported by the Joint Committee on Atomic Energy.

"We've used the instrument in 30 to 40 operations," said Edwards who, in addition to being a professor of surgery and director of the

Thoracic and Cardiac Surgery Division at the University's School of Medicine, is also in charge of thoracic surgery at both the Bernalillo County Medical Center and the Veterans Hospital at Albuquerque. "We've used it in heart operations that are required for coronary artery diseases. These are the arteries that supply blood to muscles of the heart itself. They are about the size of a kitchen match. While a vein in the leg can be removed and used to bypass an obstructed coronary artery, what we have been doing in Albuquerque is to use the internal mammary arteries in the chest wall next to the heart by detaching them at only one end. Each mammary artery has 40 or 50 branches that must be cut before the artery can be hooked up to bypass an obstructed coronary artery. It takes two or three minutes to clamp, cut and tie off each of these branches. Multiply this by 40 or 50 and it amounts to a significant amount of time. We sometimes have to discct out three artcontinued on page 8 Danny Doss, MP-3, explains how the electrosurgical tool is used to cut branches of mammary arteries. The rubber tubing in his left hand is about the thickness of one of the branches.



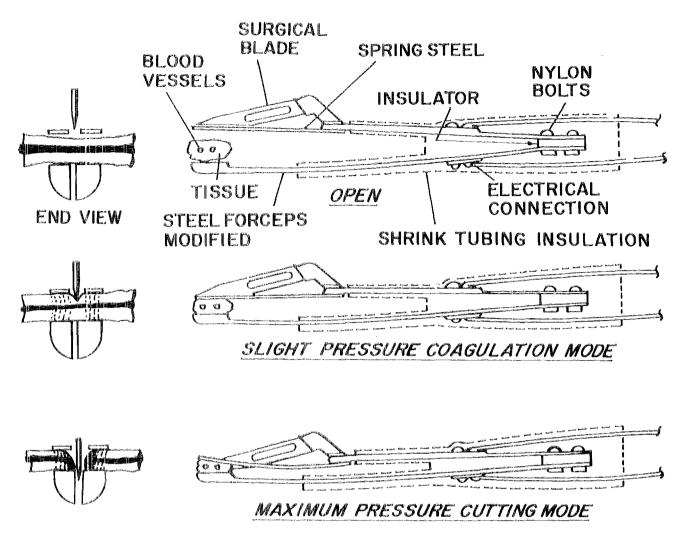


BILL McCabe, MP-3, solders connections on an isolation transformer, which is a part of the electrosurgical coagulating-cutting forceps systems.

eries. When it takes all morning to do this, a surgeon is exhausted before he actually begins the bypass operation."

The problem with the conventional cauterizer is that the current is not limited to the desired area. It consists of a single electrode and a ground plate generally placed under the patient. When the electrode is placed in contact with tissue, current flows in all directions. "This type of instrument isn't practical to use when removing something like a mammary artery," said Edwards. "We could damage the artery while cauterizing its branches.

"With the new instrument, it takes seconds rather than minutes to free each branch of a mammary artery. So, it reduces surgical



fatigue and, also, cost and risk to the patient in that he is not as long under anesthesia."

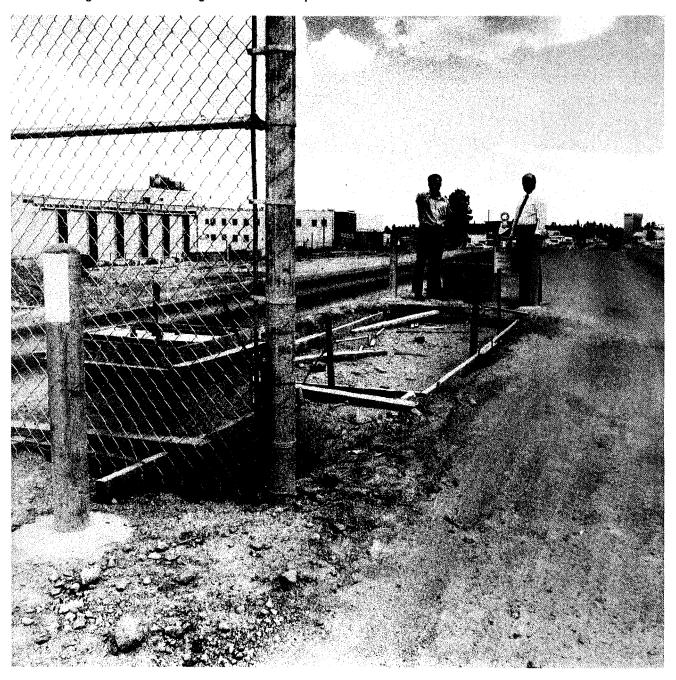
According to McCabe, "Everything used in making the instrument is available through LASL stock at a cost of under \$10." It consists of a modified forceps with integral surgeon's blade which draws power from a standard electrosurgery generator and is isolated from ground by a small transformer. The vessel to be coagulated and cut is held lightly between the jaws of the forceps and the electrosurgery-generator foot pedal is depressed for two to three seconds. This causes an electric current to flow between the forceps which heats and coagulates the blood. Then, by applying additional pressure, a surgical blade passes through slits in the jaws and cuts the vessel.

"There were two forerunners to the present instrument," said Doss. "At first we experimented with a device that was similar in appearance to a two-pronged fork. The artery to be cauterized was placed between its prongs, cauterized with radio-frequency current, and then broken by twisting. Next, we tried a bipolar forceps. The artery was grasped between the forceps and cauterized, and then the surgeon cut it with a scissors. From here, what we did was combine cauterizing and cutting capabilities into a single instrument. It was used in animal tests and clinical trials before being used in surgery."

This drawing shows the sequence of operating the electrosurgical coagulating-cutting forceps. The vessel to be cauterized and cut is placed between the forceps (top). When the vessel is held lightly between the forceps (middle), an electrosurgery generator is turned on for two to three seconds. This causes electric current to flow between the forceps, which heats and coagulates the blood. By applying additional pressure (bottom), the surgical blade passes through slits in the jaws of the forceps and cuts the vessel.

Phasing In Some New Physical-Security Measures

Bob Pogna, head of the newly formed LASL Security Office, and Bob Sweet, chief of physical security, look over area where a new guard station is being built near the Pajarito Road-Jemez Road intersection.



mployees at the Los Alamos Scientific Laboratory are used to guard stations, fences, technical area badges and other measures taken to control access to government property. Until 1957, those who lived and worked in Los Alamos needed a badge to get in and out of the town itself.

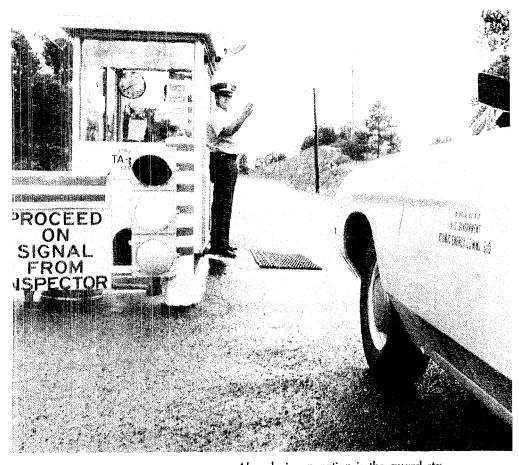
Many security measures are meant simply to physically protect valuable government property and facilities. This is the focal point of some new access-control measures that will be phased in at the Laboratory during the next few months. The measures are to improve access control at the Laboratory's main technical area and at some other sites and buildings.

According to Bob Pogna, head of the newly formed LASL Security Office, which is responsible for security-related functions at the Laboratory, and Bob Sweet, chief of physical security, the controls are being implemented in compliance with regulations which specify the role of contractors, such as LASL, in protecting property and facilities of the Atomic Energy Commission. The physical protection program of the AEC applies to all LASL non-security areas with a monetary value of \$1 million or more, exclusive of land, where national security, AEC program continuity, or public safety constitutes an important AEC responsibility.

Bringing LASL into harmony with these regulations is not meant to deny access to anyone who does business with the Laboratory. "We haven't had any problems with our security system, but we would be making a terrible mistake if we didn't do everything we can do and should do to physically protect property and facilities that are paid for with the taxpayer's money," Pogna said.

He noted that each part of the improved access-control program is being phased in individually as construction is completed and administrative details are worked out.

Probably the most apparent of the new access-control measures are

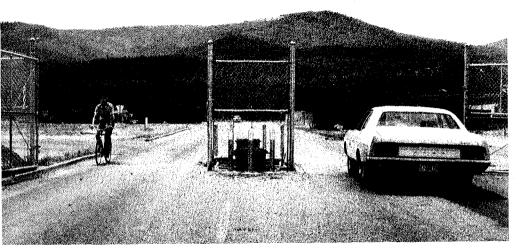


four new guard stations. One of these is already in operation on the spur off Jemez Road, leading to the Clinton P. Anderson Los Alamos Meson Physics Facility. Another has been built on the access road in Los Alamos Canyon to control entry to W Site and Omega Site. The other two stations are being constructed just inside the main technical area on Pajarito Road-one near the Pajarito Road-Diamond Drive intersection and the other near the Pajarito Road-Jemez Road intersection. The Pajarito stations will be used to control access to the Laboratory's chemical and general warehouses, the Zia Company Technical Division Shops, the Van de Graaff building, the Physics building and Analytical Center, and the Sherwood office and laboratory buildings.

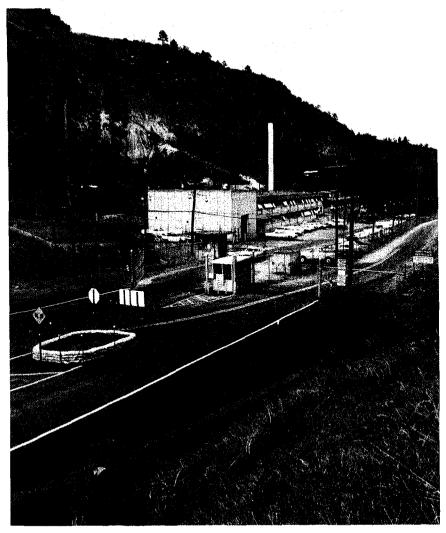
The LAMPF, Los Alamos Canyon and Pajarito-Diamond Drive guard stations will be open only

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Already in operation is the guard station on the spur off Jemez Road, leading to the Clinton P. Anderson Los Alamos Meson Physics Facility. Official AEC vehicles, such as the one being waved through by Protective Force Inspector Joseph Desgeorges, will be admitted to all "2406" facilities at the Laboratory.



Above, the guard station just off the Pajarito Road-Diamond Drive intersection is under construction. It and the station near the intersection of Pajarito Road and Jemez Road will be used to controll access to the main technical area. Persons riding bicycles can hand carry decals, while the decals must be affixed to the windshields of four-wheeled vehicles. Below, at the fork in the road in Los Alamos Canyon, a guard station has been constructed that will be used to control access to both W Site and Omega Site. The guard station presently in use at W Site, behind the new one, will not be used when the new station becomes operational.



during normal Laboratory operating hours. The Pajarito-Jemez Road station, however, will be operational 24 hours a day, seven days a week. Like other stations at LASL, all four will be manned by members of the AEC's Protective Force. Vehicles and pedestrians must stop and produce acceptable identification before passing these control points.

New administrative controls will be implemented at the Occupational Health Laboratory, Cryogenics buildings and the Health Research Laboratory. When these controls are put into effect, employees will let themselves into the building in which they work by operating a pushbutton lock on its main doors. For other persons desiring entry, the main doors will be operated electrically by personnel who work inside. The doors are equipped with buzzers (the Occupational Health Laboratory will also have an intercom system) by which access-control personnel in the buildings can be signaled. Control personnel at the Occupational Health Laboratory and at the Cryogenics buildings will normally be secretaries. At the Health Research Laboratory, the doors will be controlled by the switchboard operator. Once inside the buildings, visitors must show acceptable identification before passing the control points.

Forms of identification deemed acceptable will be expanded to expedite traffic at the new stations and administratively controlled areas, and at all other so-called "2406" facilities ("protected areas" as designated by AEC Manual Chapter 2406, "Physical Protection of AEC Property"). Other 2406 facilities at the Laboratory include Omega Site, HP Site, and the Liquid Waste Disposal Facility. Identification that will be accepted at these facilities will vary somewhat between administratively controlled areas and guard stations and between some guard stations themselves.

During emergencies, ambulances,



The Visitor Control/Badge Office was recently moved to the lobby of the LASL Administration Building after being operated by the Atomic Energy Commission for more than 25 years. Decals for non-LASL persons who frequent the South Mesa Cafeteria will be issued at the office, as well as other forms of acceptable visitor identification, such as is being issued to Carl Tolonen, a government employee from Denver, by Elizabeth Martinez and Bob Rael.

fire trucks, and safety and Protective Force vehicles will be allowed to enter any of the 2406 facilities without delay. Aside from emergency vehicles and official AEG vehicles, forms of identification that will be accepted at any of the facilities mentioned include the technical area badge carried by LASL employees; the Form AEC-490, an identification card issued to employees of the AEC's Albuquerque Operations Office; Sandia Laboratories badge with a "C" designation; LASL guest identification card, a blue card with black lettering issued to short-term visitors; and the guest badge, a photographic badge issued to non-LASL persons who are doing work at the Laboratory over a long term, including foreign nationals.

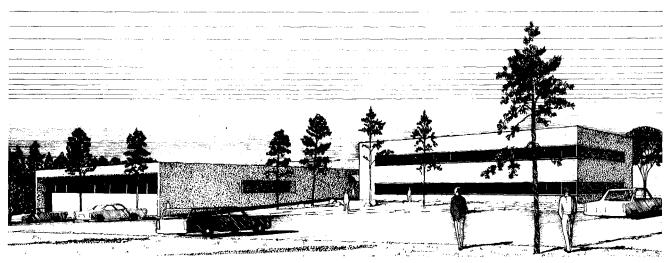
Inspectors and administrative control personnel may also admit persons on written or verbal instructions. By prearrangement, a person's name can be placed on an access list at 2406-facility control points. In the event that approval for a person's entry has not been prearranged, control personnel can obtain verbal approval by calling a designated number within the facil-

ity. The written and verbal instructions for access generally apply to delivery, concession, construction and other types of commercial-service vehicles. Keys to service gates and doors will be controlled by key custodians within each facility, with the exception that the Laboratory's Supply and Property Department will have keys to expedite access for its delivery personnel.

Three special-purpose decals will be introduced for the purpose of expediting vehicular traffic through guard stations at 2406 facilities. One of these, already in use, has "LAMPF" lettered in black on a yellow background. This decal will allow vehicle occupants to enter any of the guard-station controlled facilities mentioned. Another of the decals will have "LASL" lettered in black on a white background. The "LASL" decal will be acceptable identification at any of the 2406 guard stations with the exception of LAMPF. The third decal will have "LASL" lettered in black on a red background. This decal is meant for non-LASL persons who frequent the South Mesa Cafeteria. This decal will be valid only at the Pajarito-Jemez Road station. Persons not employed by the Laboratory will also be admitted through this station to use the cafeteria if they register their name, home address and time of entry. In these cases, the inspector on duty will give verbal instructions to the effect that admission is not authorized anywhere except at the cafeteria.

Decals must be affixed next to the state inspection sticker on the windshield of an automobile (The current practice of placing "LAMPF" decals at the top center of the windshield is acceptable for the present.) Persons riding bicycles, motor bikes or other open vehicles will be allowed to hand carry the decals because the majority of these types of vehicles do not have a suitable location for them to be affixed, and outside elements would rapidly deteriorate the decals.

"The decals have been ordered," said Sweet. "After we receive them from the printers, we'll distribute them to employees through their groups and divisions, with the exception of the cafeteria decals which will be issued by the Visitor Control/Badge Office upon written application."



The National Security and Resources Study Center might look like this, according to one of the early artist's conceptions. The technical library would be located in the

unit at left and would be linked to the office-seminar unit at right by a connecting section. Combined, the two units would total 69,000 square feet.

LASL's Proposed

National Security and Resources Study Center

A new facility to improve communication and interaction among national and international experts working on scientific approaches to some of the world's most pressing problems has been proposed at the Los Alamos Scientific Laboratory.

To be known as the National Security and Resources Study Center, it would be a facility, unique in the United States, where scientists from various technical institutes and laboratories would share the use and support of a centralized conference and study environment, one of the nation's best technical libraries and most powerful computer centers, and shops and various other industrial support services.

If design money is received this fiscal year for architectural and en-

gineering design work, the center could be constructed the next year and be open for use by scientific groups in 1976.

"The Los Alamos Scientific Laboratory has continuing requests to host scientific working study groups such as the Defense Science Board, JASON, and the various service Scientific Advisory Panels, for periods of two to six weeks," stated Laboratory Director Harold Agnew. "We have never been able to comply with these requests since we have no space. In fact, the whole of the U.S. has no proper space where these study groups can work and have available to them library and computer facilities under proper security conditions.

"We would propose as part of the new construction which will

house our library . . . to provide 28 offices with appropriate seminar rooms to handle such study groups. Working sessions could then be held on a classified or unclassified basis, and U.S. and international scientific groups could hold their sessions at Los Alamos. There is no question that such a facility would correct a very serious deficiency in existing facilities in the U.S. In part it would provide on a minimal scale a capability which only exists in foreign countries such as France and Switzerland for UNESCO or IAEA working meetings.

"With this facility meetings and working sessions now held outside of the U.S. could be held here. Such a facility, properly designed to allow for growth, could lead Los Alamos toward being a Science City with other AEC technical institutes being located here and sharing expenses for computers, libraries, and shops. Both the desirability and the likelihood of such development have increased sharply in recent years. The Los Alamos Scientific Laboratory, like the AEC itself, has broadened its interests and capabilities. Environmental studies, biomedical uses of nuclear energy, and the exploration and development of new computer applications have all become more important at Los Alamos. Perhaps most significant, the Laboratory has taken historic initiatives in geothermal energy, controlled fusion, power transmission, and other fields related to the problem of finding ways to supply clean energy for the future. It is at least conceivable that Los Alamos could become a world center for research and development aimed at solving the energy problem. The existence of the new center, with its facilities for efficient working sessions, will in any case make a vital contribution to the continuing and growing usefulness of the Laboratory."

The proposed center would be a 69,000-square-foot, two-story build-

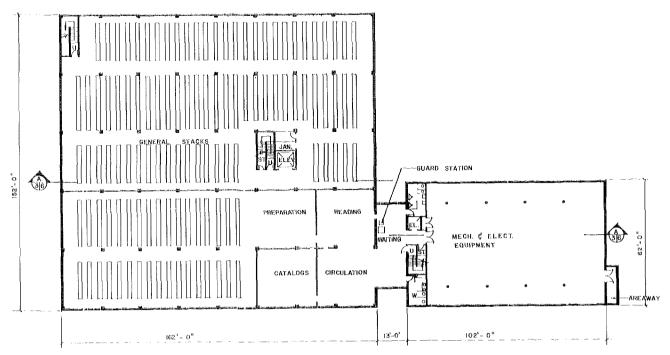
ing, located north of the Administration Building and the Central Computer Facility. It would consist essentially of two units—one for the technical library and the other for offices and seminar rooms—linked by a connecting section.

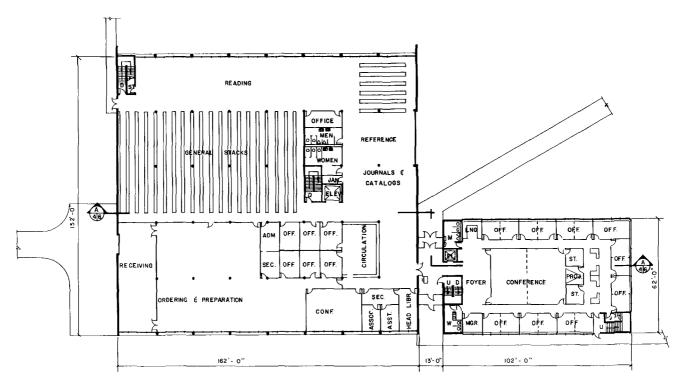
The office-seminar unit would provide an area of 19,000 square feet, including the connecting section and a basement for housing the utilities required for the entire center. Space would be provided for approximately 56 persons in 28 offices, a secretarial pool and a seminar room with a capacity for 100 persons. The seminar room would be divisible into smaller rooms by means of folding partitions.

The library unit would consist of 50,000 square feet of space. The second floor would be open to LASL employees and to the public. It would contain the library offices and administrative areas, the circulation desk, the reference collection, journals, catalogs, some unclassified books and reports, and reading areas and study carrels. The first floor would house the bulk of the unclassified stacks and the classified report library.

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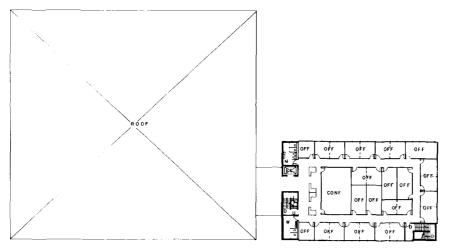
The office-seminar unit would have a basement for housing the utilities required for the entire center. At the same level, technical library space would house the bulk of the unclassified stacks and the classified report library.





The first floor of the office-seminar unit would contain a seminar or conference room which could be divided into smaller rooms and offices. In the technical library unit there would be the library offices and administrative areas, the circulation desk, the reference collection, journals, catalogs, some unclassified books and reports, and reading areas and study carrels.

According to the early concept being followed, the office-seminar building would rise above the technical library unit. The taller structure would contain a conference or seminar room and offices for members of study groups on its top floor.



An important feature of the proposed library unit-in addition to improving the availability of the library's resources to study- and working-groups, is that it would be a solution to inadequacies of present library facilities. The proposal for the new structure is predicated on the exhaustion of present storage space, computed on the basis of existing collections and experienced growth rates, and the inability of present quarters to meet reading space requirements much beyond the proposed completion date of the National Security and Resources Center.

The main and report libraries—which comprise the technical library—now occupy a total of about 23,000 square feet in separate wings of the Administration Building, adjacent to the Central Computer Facility. The growth of reliance on services offered by the CCF has led to a corresponding growth in demand for nearby space to house technical users of these services. Vacating of present technical library facilities would alleviate some of these space requirements.

short subjects

Robert Keepin, A-1 group leader, was presented the American Nuclear Society's Special Award for 1973 at the Society's annual meeting last month in Chicago.

The award, for outstanding work in "Nuclear Materials Safeguards Technology" was received by Keepin "for his early recognition of the need for non-destructive assay of fissile materials, his demonstration of a practical method for accomplishing this goal through passive and active interrogation and his leadership in implementing these techniques and gaining wide acceptance for their use."



James Altman, E-DO, has been elected president of the newly formed Northern New Mexico Chapter of the National Property Management Association, the first NPMA chapter in New Mexico.

Other officers elected at the recent organizational meeting of the chapter are **Dwight Clayton**, SP-2 group leader, vice president; **Hazel Bechtol**, WX-1, secretary; **John Stein**, AEC Los Alamos Area Office's Financial Management and Procurement Branch, treasurer; **Allen Hasty**, CMB-DO, and **Norman Riechman**, SP-2, chapter representatives to the national organization.

The purpose of NPMA chapters is to keep members informed of the latest developments and thinking in the property management profession through published data, such as the "NPMA Newsletter," to provide monthly workshops and programs which, under the auspices of the national organization, bring top spokesmen in the field to discuss key developments at the local level. Most importantly, members have the opportunity to discuss professional problems with their counterparts in government and industry.



Fremont Carroll, ENG-2, has retired after 18 years of Laboratory service. He and his wife, Carmel, plan to remain in Los Alamos.

Earl Ross, ENG-2, a Laboratory employee since 1961, has retired. He and his wife, Dorothy, will continue to live in Santa Fe.

"Computer Color Generations," produced at the Los Alamos Scientific Laboratory, won a first place silver cup and diploma at the XX International Electronic Nuclear and Telecommunications Review and Congress in Rome.

Mario Balibrera, ISD-7, was director/writer for the film. Billy Claybrook and Robert Gordon, also of ISD-7, were cameramen.

A total of 107 documentaries from 12 nations competed for the six major film awards. Two of these awards went to U.S. entries, one of which was "Computer Color Generations."



Bob Pogna was appointed to head the newly formed LASL Security Office effective July 1. The office, which is assigned to the Director's Office, has assumed several security-related functions previously dispersed among several Labora-



tory organizations. The office includes members of the former security group, PER-3, which was headed by Pogna, and the Visitor—Control/Badge Office which had been operated by the Atomic Energy Commission's Los Alamos Area Office for about 25 years.

Pogna came to Los Alamos in October of 1972

from Albuquerque where he was security officer for EG&G's Albuquerque Division.

He attended Gunnison County High School, Colo., in 1941-1942. After more than two years of service in the U.S. Navy, Pogna attended classes at Western State College, Gunnison, where he graduated in 1952 with the B.A. degree in business administration. He was employed by the AEC from 1952 until 1966, first as a member of the Protective Force at Los Alamos until 1954. In 1955, he began work on AEC assignments in Idaho, followed by employment with the AEC's Personnel Clearance Branch in Albuquerque from 1957 until 1961. Pogna served as security assistant in the Commission's Information Security Branch in Albuquerque from 1961 until 1966 when he was named security officer for the Albuquerque Division of EG&G.

Kaye Lathrop, T-1 group leader, has been elected to the Board of Directors of the American Nuclear Society.

The American Nuclear Society is a non-profit international scientific, engineering and educational organization founded in 1954. It regularly sponsors meetings where research papers are presented and it publishes these and similar papers in its several journals. Its members include research scientists, university professors, physicians, students and persons in public service.



Ed Walterscheid, patent attorney at the Los Alamos Scientific Laboratory, has won the State Bar of New Mexico's First Annual Legal Writing Contest.

The first-place award, consisting of \$500 and an engraved plaque, was won by Walterscheid's essay, "With Malice Toward One," an analysis of the New Mexico law of libel together with its expected effects as a result of recent United States Supreme Court decisions interpreting First Amendments rights.



Peter Carruthers, a professor of physics at Cornell University, has been named to head T-Division at the Los Alamos Scientific Laboratory, succeeding J. Carson Mark.

Carruthers appointment was announced by Laboratory Director Harold Agnew, effective July I. Carruthers received the B.S. and M.S. degrees from the Carnegie Institute of Technology and the Ph.D. in theoretical physics from Cornell in 1961. He was a National Science Foundation Fellow as a graduate student. He joined the faculty at Cornell in 1961 and rose to the rank of professor in 1967. He was an Alfred P. Sloan Research Fellow, 1963-65; visiting professor at the California Institute of Technology in 1965 and again in 1969-70; National Science Foundation Senior Fellow, University of Rome, 1967-68. He is a member of the American Physical Society and the Italian Physics Society.

Mark was assigned to the Laboratory in 1945 as a member of the British Mission from the National Research Council of Canada. In 1946 he became a Laboratory staff member and was named division leader in 1947. He is a member of the American Physical Society and the American Mathematical Society.

Louis Rosen, MP-Division leader, has been named chairman of the committee to nominate the next recipient of the American Physical Society's T. W. Bonner Award. Rosen will receive nominations and supporting documentation for the award prior to Oct. 1.

The Bonner Award, consisting of \$1,000 and a certificate citing the contributions of its recipient, was established in 1964 as a memorial to Bonner by his friends, students and associates. The original memorial fund was endowed by the Texas Nuclear Corporation for the purpose of establishing a prize of wide significance in the stimulation of research in nuclear physics.

It is presented annually to "physicists whose work in nuclear physics is primarily experimental, but a particularly outstanding piece of theoretical work will take precedence over experimental work. There are no time limitations on when the work was done."



Glenn Graves, assistant for research at LASL, has been named a Fellow of the American Nuclear Society.

ANS Fellowships are reserved for acknowledged attainment in the nuclear field by notable original research or invention, by technical leadership of substantial scope, or by outstanding leadership as a teacher.

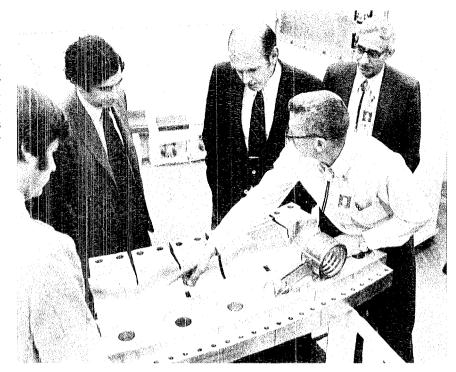
Graves' appointment, announced at the 19th Annual Meeting of the Society in Chicago, is for his "contributions in radiation environmental analysis, shielding studies, radiation damage effects and flight safety studies which have been important to the advancement of the nuclear rocket propulsion system. For teaching activities, society leadership and service to the International Atomic Energy Agency (IAEA)."

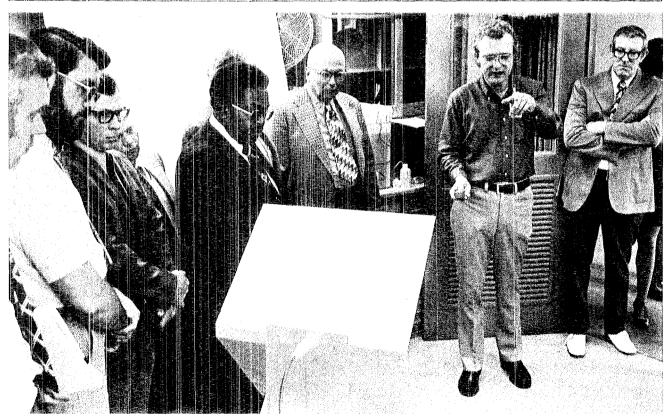


Fred Schonfeld, CMB-5 group leader, has been elected a Fellow of the American Society for Metals. The honor will be conferred at the ASM Annual Meeting in Chicago, Oct. 2.

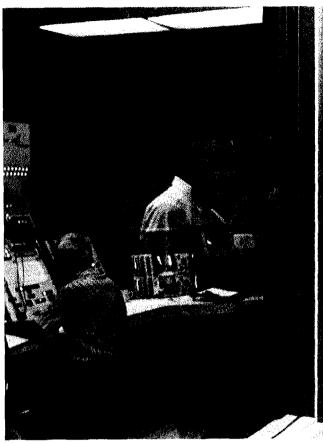
The honor represents Schonfeld's "distinguished contributions in the field of metals and materials and develops a broadly based forum for technical and professional leaders to serve as advisors to the Society," stated Allan Putnam, ASM managing director.

Warren Quinn, Q-3 alternate group leader, explains the function of a section of the Scyllac compression coil to AEC Commissioner William Doub, third from left, and members of Doub's staff, Martin Domagala and Herbert Brown. In background is Richard Taschek, LASL associate director for research.

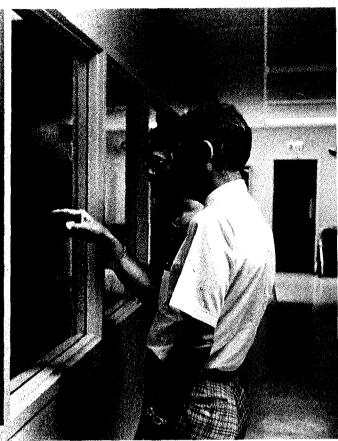




Steven Depp, E-DOR, demonstrates an animal identification and temperature monitoring apparatus developed at the Los Alamos Scientific Laboratory for the U.S. Department of Agriculture. The electronic apparatus is a part of the USDA-sponsored project to develop methods for rapid detection of diseased animals and determination of their herds of origin. Watching the demonstration are members of the Department's Veterinary Biologics staff of Ames, lowa, during their recent visit in connection with USDA projects being conducted at LASL.



Philippe Leconte (second from right), an experimental physicist from Saclay, France, was a recent visitor to the Los Alamos Scientific Laboratory. Tom Putnam (right), as-



sistant MP-Division leader for safety, escorted Leconte on a tour of LAMPF. Earl Meyer, MP-9, (left) is seated at a control console at the meson physics facility.

the technical side

Taken from Technical Information Release Forms submitted to ISD-6

Department of Environment, University of Paris, France, March 14:

"Monte Carlo Simulation of Biological Population Interactions" by D. R. Harris, T-2 (invited)

Seminar '73, Texas Technological College, Lubbock, March 20:

"The Energy Crisis" by E. F. Hammel, Q-DO

Edgewood Arsenal, Md., April 27, and University of Oklahoma, Norman, April 30:

"Fast Nucleon Capture" by D. M. Drake, P-3

Tenth Rare Earth Research Conference, Carefree, Ariz., April 30-May 3:

"A Neutron-Diffraction Study of LaNi $_5$ D $_7$ " by A. L. Bowman and J. L. Anderson, both CMB-3, and N. G. Nereson, P-2

"Removal of Phosphates from Wastewaters with Electrochemically Generated Gadolinium Ions" by E. 1. Onstott, CMB-8

"The Actinide Metals" by L. B. Asprey, CNC-4 (invited)

Symposium, American Chemical Society, Polymer and Rubber Chemis-

try Divisions, Detroit, Mich., May 1-4:

"Polymeric Precursors of Carbon" by E. M. Wewerka, WX-2

"Graphite Binders from Aromatic-Hydrocarbon Polymers" by J. M. Williams and R. J. Imprescia, both CMB-8, and E. M. Wewerka, WX-2

Cornell University, Ithaca, N.Y., May 2; and Naval Research Laboratory, Washington, D.C., May 3:

"High-Energy, Short-Pulse, Gas Laser Systems" by C. A. Fenstermacher, L-1

Robert A. Welch Foundation Lecture, Midwestern University, Wich-

ita Falls, Texas, May 2; Texas Women's University, Denton, May 3; and East Texas State University, Commerce, May 4:

"Empirical Evaluation of Theoretical X-ray Scattering Models using Data from Boron Carbide and Diamond" by A. C. Larson, CMB-5

Colloquium, Max Planck Institute for Extraterrestrial Physics, Munich, West Germany, May 2:

"The Use of Explosive Shaped-Charge Vapor Jets for Magneto-spheric Diagnostics" by P. J. Bottoms, J-10 (invited)

1973 Institute of Electrical and Electronic Engineers Region Six Conference on Minicomputers and Their Applications, Honolulu, Hawaii, May 2-4:

"Minicomputer Applications at LAMPF" by R. A. Gore and D. R. Machen, both MP-1

1973 DECUS Spring Symposium, Philadelphia, Pa., May 2-5:

"An Expanded Focal Interpretor for Real-Time Data Acquisition and Analysis" by L. V. East, A-1

Colloquium, Arizona State University, Tempe, May 3:

"Nuclear Diagnosis with High-Energy Collisions" by A. S. Goldhaber, MP-DO

Finite Element Design Application Meeting, Atomic Energy Commission Headquarters, Germantown, Md., May 3-4:

"Current Code Development and Application of the Finite Element Method" by K. D. Lathrop and W. H. Reed, both T-1

"Review of Discrete Ordinates Method and Solution Techniques" by K. D. Lathrop, T-1

National Resource Professional Societies Energy Crisis Symposium, Albuquerque, May 3:

"The Los Alamos Scientific Laboratory Hot Dry Rock Geothermal Energy Program" by R. L. Aamodt, Q-22

Atomic Energy Commission Scientific Computer Information Exchange Meeting, San Francisco, Calif., May 3-4:

"Computer Program Optimization Using Software Monitoring Techniques" by A. F. McGirt, L. E. Rudsinski, and K. J. Melendez, all C-4

Meeting, Central Branch, Tissue Culture Association, Ardmore, Okla., May 3-5:

"Regulation of Proliferation in the Mammalian Cell" by R. A. Tobey, H-9 (invited)

Colloquium, Physics and Astronomy Departments, University of New Mexico, Albuquerque, May 4:

"Physical Methods for the Detection of Trichinella in Pork" by J. D. Seagrave, P-DOR

Annual Meeting, Rio Grande Chapter, Health Physics Society, Santa Fe, May 4:

"Flealth Physics--25 Years" by D. Meyer, H-DO

Annual Sigma Xi Meeting, Albuquerque Chapter, University of New Mexico, May 5:

"The Energy Crisis: How Much Real, How Much Imagined, What Can We Do About It?" by E. F. Hammel, Q-DO

International Conference on the Technology of Electrostatic Accelerators, Daresbury Nuclear Physics Laboratory, Lancashire, England, May 5-7:

"Reflections upon Design Criteria for a Good Accelerating Tub" by J. L. McKibben, P-9

"Lamb-Shift Polarized Sources at Los Alamos Scientific Laboratory" by J. L. McKibben, P-9

American Society for Microbiology Annual Meeting, Miami Beach, Fla., May 6-11:

"The Development of Prophage HPlcl After UV-Induction: An Electron Microscopic Analysis" by R. T. Okinaka, H-DO, S. H. Cox and B. J. Barnhart, both H-4

"Prophage Derepression by Ultraviolet Radiation" by B. J. Barnhart and S. H. Cox, both H-4

Colloquium, University of New Mexico, Albuquerque, May 7:

"The Use of Functional Blocking Groups in the Chemical Synthesis of Deoxyribonucleotide Sequences" by D. L. Williams, H-9 (invited)

University of Tennessee Space Institute, Tullahoma, May 7:

"Safety Considerations in Energy Storage Capacitor Banks" by E. L. Kemp, Q-4

Biological Sciences Department, Lehman College, University of New York, West Bronx, May 7:

"X-ray Inactivation of the DNA-Dependent RNA Polymerase" by G. F. Strniste, H-9 (invited)

Seminars, California Institute of Technology, Pasadena, May 7; and Lawrence Berkeley Laboratory, Calif., May 11:

"Simple View of High-Energy Hadron Nucleus Collisions" by A. S. Goldhaber, MP-DO

First Annual Mountain Region Conference of the Association for Computing Machinery, Scottsdale, Ariz., May 7:

"Net Processor of the LASI. Computer Network" by M. W. Collins, C-2

"User Documentation for a New System" by R. Davenport, C-2

"Service Processor for the LASL Network" by R. J. Krantz, C-2

Respiratory Tract Morphology Conference, The Lovelace Foundation, Albuquerque, May 7-8:

"Morphologic Techniques" by L. M. Holland and J. R. Prine, both H-4 (invited)

University of New Mexico Nuclear Engineering Department Nuclear Criticality Safety Short Course, Taos, N.M., May 7-11:

"Consequences of Criticality Accidents" by R. Reider, H-3

"Principles of Safety" by R. Reider, H-3

"Contingencies and Risk Control" by R. Reider, H-3

"'Crificality Experiments and Data" by H. C. Paxton, P-5

Conference on Stable Isotopes in Chemistry, Biology, and Medicine, Argonne National Laboratory, Ill., May 9-11:

"Carbon-13 Nuclear Magnetic continued on next page

Resonance Spectroscopy of Labeled Biological Systems" by N. A. Matwiyoff, CNC-4

"Large-scale Photosynthetic Production of Carbon-13 Labeled Sugars" by V. H. Kollman, C. T. Gregg, T. W. Whaley, D. G. Ott, all of H-11, and J. L. Hanners, H-9

"Organic Synthesis with Stable Isotopes" by T. W. Whaley, V. N. Kerr, and D. G. Ott, all H-11

Association of University Radiologists' Twenty-First Annual Meeting, University of British Columbia, Vancouver, Canada, May 9-13:

"Plans and Progress Toward Developing a Therapeutic Pion Beam at the Los Alamos Meson Physics Facility" by R. L. Hutson, A. S. Lundy, E. A. Knapp and M. A. Paciotti, all MP-3

"A Method for Achieving Clinically Useful Pion Dose Distributions" by A. S. Lundy, J. A. Helland, R. L. Hutson, all MP-3, D. J. Liska, MP-9, J. D. Wallace, MP-8, and E. Rodaers, consultant in MP-3

"Whole Body Dose Distribution Due to Neutrons and Photons in Negative Pion Radiotherapy" by M. E. Schillaci, MP-3, and M. M. Kligerman, ADRT and University of New Mexico Cancer Research and Treatment Center

Seminar, New Mexico State University, Las Cruces, May 10:

"EPICS—A Powerful Tool for Pi-Nucleus Scattering at LAMPF" by H. A. Thiessen, MP-7

Hepatoma Conference, National Cancer Institute, National Institute of Health, Bethesda, Md., May 10-12:

"Determinations of Cellular DNA Contents of Hepatomas with Differing Chromosomal Complements by Flow Microfluorometry" by H. A. Hopkins, C. J. Kovacs, M. N. Mitchell, W. B. Looney, all Division of Radiobiology and Biophysics, Departments of Pediatrics and Radiology, University of Virginia School of Medicine, Charlottesville, and P. K. Horan, H-10 (invited)

Physics Seminar, Colorado College, Colorado Springs, May 11: "The Heat Pipe" by J. E. Deverall. Q-25 (invited)

Meeting, Electrochemical Society, Inc., Chicago, Ill., May 13-18:

"Successes and Failures of Thermodynamic Correlations" by D. R. Conant CNC-2

"Metallographic Study of Alloys Splat Cooled from Two-Liquid Regions" by D. N. Hopkins, AWU student in CNC-2

Numerical Analysis Special Interest Group Meeting, Sandia Laboratories, Albuquerque, May 14-16:

"Distance Tests of Normality" by R. K. Lohrding, C-5

"Coverage Problem" by R. K. Zeigler, C-5

"Tests of Hypotheses in Unbalanced Nested Designs" by G. L. Tietjen, C-5

"A Survey of Methods for the Direct Solution of the Discrete Poisson Equation" by F. W. Dorr, C-4 (invited)

"Modifications to the Generalized Gauss Quadrature Code" by D. K. Kahaner, C-6

First Lloyd V. Berkner Memorial Symposium, Dallas, Texas, May 14-17:

"A Nonlinear Theory of the Type I Equatorial Electrojet Irregularities" by K. Lee, T-6, and C. F. Kennel and F. V. Coroniti, both University of California, Los Angeles

Gulf Coast Section, American Industrial Hygiene Association Meeting, Houston, Texas, May 15:

"Respirator Research Activities" by B. J. Held, H-5

Symposium for Laser Damage and Optical Materials, Boulder, Colo., May 15-16:

"Self Focusing of Very Powerful Laser Beams" by B. R. Suydam, T-6 "Radiation Induced Damage to NaCl by 10.6µ Fractional Joule, Nanosecond Pulses" by W. H. Reichelt and E. E. Stark, Jr., both

Symposium on Advanced Technology Arising from Particle Physics Research, Argonne National Laboratory, Ill., May 17:

"Some Applications of Particle Accelerators and Particle Counting Techniques in Biology and Medicine" by M. R. Raju, H-10 (invited)

American Institute of Chemists Meeting, Los Alamos, May 18:

"Modern Inorganic Chemistry" by L. B. Asprey, CNC-4

Lecture, Harvard School of Public Health, Cambridge, Mass., May 18:

"Industrial Health in Nuclear Industry" by H. F. Schulte, H-5

Seminar, University of Minnesota Department of Mechanical Engineering, Minneapolis, May 18.

"Superconducting Power Transmission and Superconducting Energy Storage" by E. F. Hammel, Q-DO

American Industrial Hygiene Association Conferences, Boston, Mass., May 20-25:

"Planned Protection for Entry into a Pre-Mined Complex after an Underground Nuclear Test" by J. D. DeField, H-5, A. J. Ahlquist and R. F. Smale, both H-8

"Respirator Protection Factors and a Selection Guide" by E. C. Hyatt, H-5

"Degradation of Resin Wool Respirator Filters" by E. C. Hyatt, C. P. Richards, L. A. Geoffrion, and T. O. Moore, all H-5

"Sodium Chloride Aerosol Test System for Dust and Fume Respirator Filters" by J. A. Pritchard, C. P. Richards, T. O. Davis, Jr., L. Wheat, P. Hesch and E. C. Hyatt, all H-5

"The Effect of Humidity on Airborne Non-Hygroscopic Particles" by M. I. Tillery, H. J. Ettinger and G. W. Royer, all H-5, and O. R. Moss, University of Rochester, N.Y.

"Beryllium, the Criteria Document" by H. F. Schulte, H-5

"Calibration Standards for Counting Asbestos" by L. W. Ortiz, H. J. Ettinger and C. I. Fairchild, all H-5

"A Concentric Aerosol Spectrometer" by M. I. Tillery, H-5

"Self Evaluation of a Large Laboratory for Compliance with Occupational Health and Safety Standards" by G. M. Talley and W. E. Stocum, both H-5

"Facepiece Leakage of Self-Contained Breathing Apparatus: De-

mand vs Pressure Demand" by C. P. Richards and E. C. Hyatt, both H-5

Cold Spring Harbor Laboratory, N.Y., May 20:27:

"Sequential Biochemical Events in Preparation for DNA Replication and Mitosis" by R. A. Tobey, L. R. Gurley, C. E. Hildebrand, R. L. Ratliff, and R. A. Walters, all H-9

Nineteenth National Instrumentation Symposium, Instrument Society of America, Las Vegas, Nev., May 21-23:

"Subterrene Instrumentation Requirements" by J. W. Neudecker, Jr., Q-23

Cross Section Evaluation Working Group Meeting, Brookhaven National Laboratory, Upton, N.Y., May 22:

"Analysis of ZPPR/FTR-2 Neutron Reaction Rates Using ENDF/B-III Data" by D. W. Muir and R. J. La-Bauve, both T-2, and R. E. Alcouffe, T-1

Seminar, University of Texas Medical School, Galveston, May 22:

"Measurements of Mammalian Cellular DNA and Its Location in Chromosomes" by L. L. Deaven, H-9 (invited)

Seventh ESLAB Symposium on Correlated Interplanetary and Magnetospheric Observations, Saulgau, Germany, May 22-25:

"Magnetospheric Plasma Flow and the Nature of the Magnetosperic Boundary Layer" by E. W. Hones, Jr., P-4

Meeting on Problems of Evaluating Electrostatic Hazards in Explosive Technology, Picatinny Arsenal, Dover, N.J., May 23-24:

"Electrostatic Sensitivity Testing of Explosives at Los Alamos" by T. E. Larson, WX-2

Cross Section Evaluation Working Group Task Force on Nuclear Data for Fission Product Decay Heat and Burnup Calculations, Brookhaven National Laboratory, Upton, N.Y., May 23:

"Recommended Charge Distribution of Mass Yield" by T. R. England, T-2 Sixteenth International COSPAR Conference, Working Group 2, Konstanz, West Germany, May 23-June 6:

"Double Ion Streams in the Solar Wind: Correlations between HEOS-2 and IMP-6" by M. D. Montgomery, S. J. Bame and W. C. Feldman, all P-4, H. Grunwaldt and H. Rosenbauer, both Max-Planck Institute for Physics and Astrophysics, Munich, West Germany

Commencement Address, Ft. Wingate High School, N.M., May 24:

"Need for Navajo Problem-Solvers" by F. Young, L-4 (invited)

Colloquium, High Altitude Observatory, Boulder, Colo., May 24:

"Temperature and Temperature Gradient in the Corona from Solar Wind Heavy Ion Data" by P. D. Kearney, Colorado State University, Ft. Collins, J. R. Asbridge, S. J. Bame and W. C. Feldman, all P-4 (invited)

"Solar Wind Heavy Ions in Flare Piston Gas" by S. J. Bame, J. R. Asbridge and W. C. Feldman, all P-4, and P. D. Kerney, Colorado State University, Ft. Collins (invited)

Westinghouse Electric Corporation Nuclear Energy Systems Center, Pittsburgh, Pa., May 24:

"National Data Base for Depletion, Fission Product Absorption, Decay Heating, and Radiological Hazards" by T. R. England, T-2

General Physics Colloquium, University of Groningen, The Netherlands, May 24:

"The History of a Stolen Idea: The Titius-Bode Law of Planetary Distances" by M. M. Nieto, T-5

Theoretical Physics Seminar, University of Groningen, The Notherlands, May 25:

"SU(3) Symmetry for Mesons, the D/F Ratio, and the DKP Equation" by M. M. Nieto, T-5

New Mexico State University, Las Cruces, May 29:

"Nuclear Effects in the Production of Pi-Plus and Pi-Minus by Protons on Nuclei" by R. R. Silbar, T-5, and M. M. Sternheim, University of Massachusetts, Amherst Radiation Shielding Information Center, Oak Ridge National Laboratory, Tenn., May 30:

"Alternatives to the Inclusion of Evaluated KERMA Factors in ENDF/B" by D. W. Muir, T-2

Niels Bohr Institute, University of Copenhagen, Denmark, May 30:

"Particle Physics at LAMPF" by M. M. Nieto, T-5

Conference on the Environment of Explosives and Explosions, Naval Ordnance Laboratory, White Oak, Silver Spring, Md., May 30-31:

"Environmental Studies at S-Site: Water and Soil Analyses for RDX-HMX, Barium, TNT, and Boron" by M. Schwartz, WX-3, and A. Turner, summer graduate student in WX-3

"Effects of Soil and Weather on the Decomposition of Explosives" by J. F. Baytos and F. W. Dubois, both WX-3

1973 Institute of Electrical and Electronic Engineers/Optical Society of America Conference on Laser Engineering and Applications, Washington, D.C., May 30-June 1:

"Short Pulse Amplification and Rotational Relaxation" by G. T. Schappert, L-1

"An Intensity-Dependent Filter" by J. M. Thorne, T. R. Loree and G. H. McCall, all L-4

"High Energy Amplifiers for the LASI. Glass Laser System" by P. N. Mace and R. L. Tanner, both L-2

"Nanosecond Pulse Amplification in Very High Gain CO₂ Amplifier Systems" by E. E. Stark, Jr., W. H. Reichelt, G. T. Schappert and T. F. Stratton, all L-1

1973 Cold Spring Harbor Symposium, Cold Spring Harbor Laboratory, N.Y., May 31:

"On the Nature of Heteroploidy" by P. M. Kraemer, H-9 (invited)

University of Tennessee, Knoxville, May 31:

"Analysis of ZPPR/FTR-2 Neutron Reaction Rates Using ENDF/B-III Data" by D. W. Muir and R. J. LaBauve, both T-2, and R. E. Alcouffe, T-1



Culled from the July and August, 1963, files of the LASL News and the Los Alamos Monitor by Robert Porton

Meson Factory

LASL physicists and engineers are making a long-range study of plans for a new and, in some ways, unique accelerator they hope to build by 1970 as an advanced physics research tool. They have dubbed the proposed machine a "meson factory" because it would produce beams of sub-atomic particles such as pi-mesons, mu-mesons and neutrinos. These particles in turn would be used as tools to probe the structure of the nucleus of the atom.

New Laboratory Museum Open to Public

LASL has established an unclassified museum in which a number of items significant in the development of the Los Alamos Scientific Laboratory are on public exhibit for the first time. Its location is room 136, AP Building, across the street from Fuller Lodge. The Community Relations Office will be in charge of the museum. Plans call for it to be included in a new building to be constructed adjacent to the Administration Building.

One Less Coyote

A note appeared on the blotter at the Police Station: "Dispatcher at airport tower reports a coyote causing a nuisance on runway." Under the "disposition" column, the follow-up read: "One coyote now extinct."

Chamber Forms

After a number of unsuccessful attempts and heart-breaking failures over a period of years, a group of Los Alamos businessmen and civic leaders formed the Los Alamos Chamber of Commerce at a dinner meeting at the Lodge. The group made plans to hold a formal organizational meeting in the near future to elect permanent officers and adopt by-laws.

Telephone Service to Receive a Boost

A new microwave system, providing 72 additional circuits, that will eliminate any waiting to make long distance calls was announced by Bill Strickfaden, Los Alamos Manager of Mountain State Telephone. In addition to long distance calls, the new system will be used for transmitting data processing, teletype and radio networks, and it will have several spare channels for any other kind of communications that might be required.

what's doing

SIERRA CLUB: Meets second Monday of each month, 7:30 p.m., Graves Hall, United Church. For information call Betsy Barnett, 662-9581.

PUBLIC SWIMMING: High School Pool— Monday through Friday, 2 to 6 p.m. and 7 to 10 p.m.; Saturday and Sunday, 1 to 6 p.m.; Adult swim club, 7 to 9 p.m., Sunday.

MOUNTAIN MIXERS SQUARE DANCING
CLUB: Pinon Park, 8 p.m. For information call Barry Lenhart, 672-9798.

Luky 21—Red River Community House

July 21—Red River, Community House, Shelby Dawson Aug. 4—Nelson Watkins, Roswell

Aug. 4—Nelson Watkins, Roswell
Aug. 18—Fun Valley, South Fork, Colo.,
Bud Garrett

Sept. 1—Jimmie Carter, Albuquerque

NEWCOMERS CLUB: For information call Pat Astle, 662-4709

July 25—Ice cream social, Peggy Pond Church, speaker, 7 p.m., Fuller Lodge Aug. 22—Couples' steak fry, Horse Mesa Picnic Area

OUTDOOR ASSOCIATION: No charge, open to the public. Contact leaders for information. River Trip*

*July 21-22—Taylor River, Colo., Jon Cross, 662-9462

July 28-29—South Truchas Peak, Bob Godwin, 672-3493

*July 28-29—Heron Lake, Cecil Carnes, 672-3593

Aug. 4—Pelado Peak, Lee Sullivan, 662-6185

*Aug. 4-5-Arkansas River, leader to be announced

Aug. 18-19—Mt. Yale, Colo., Ken Ewing, 662-7488

*Aug. 18-19—Taylor River, Colo., John Martin, 662-6451

*Aug. 25-26—Vallecito Reservoir, Colo. Richard Warnes, 662-7410 Sept. 1-3—Conejos Peak Country, Dave

WHITE ROCK KARATE CLUB: Workouts, 8 p.m., Monday and Wednesday, Pinon Elementary School gym. For information call Tom Cook, 672-9426.

LOS ALAMOS BADMINTON CLUB: Tuesday, 8 to 9:30 p.m., Girls' gym, Los Alamos High School. For information call Art or Jane Sherwood, 662-2966.

MESA PUBLIC LIBRARY:

Blevins, 662-7458

July 10-Aug. 7—Gretchen Goldstine, paintings, drawings and pottery July 12-Aug. 14—Museum of New Mexico, sculpture of the southwest

Aug. 9-Aug. 30—Sara Eyestone, batiks
 Aug. 15-Sept. 5—Los Alamos Garden
 Clubs, wild flower exhibit

Aug. 31-Oct. 1—Thayer Carter, wood-

LOS ALAMOS VOLLEYBALL CLUB: Each Monday, Girls' gym, Los Alamos High School, Men—6-7:30 p.m.,Women—8-9:30 p.m. For information call Gary Wall, 662-4601.



A delegation of Soviet Union scientists visited the Los Alamos Scientific Laboratory to discuss the Controlled Thermonuclear Research program. Shown here on a tour of LASL facilities are George Sawyer, Q-3 group leader; Vladimir Tolok, deputy director of Physical Technical Institute of Ukranian SSR; Voris Kadomtsev, section chief of Kurchatov Institute of Atomic Energy; and Nikolay Semenovich Cheverev, deputy chief of administration of USSR State Committee on Use of Atomic Energy.

Ed Knapp, associate MP-Division leader for practical applications, guides members of a delegation of highenergy physicists from China through the Clinton P. Anderson Los Alamos Meson Physics Facility. The Los Alamos Scientific Laboratory was one of several important high-energy physics centers visited during the four-week tour of a 13-member Chinese delegation. At left is Bob Jameson, MP-9 group leader. Behind Knapp is Richard Mischke, MP-4. Members of the Chinese group

are Mao Chen-lung, director, Mechanical Research Institute, First Ministry of Machine Building; Wang Jen-chuan, secretary of the Bureau of Foreign Affairs, Association of Sciences and Technology, and secretary and interpreter for the visiting delegation; Fang Shou-hsien, scientific worker, Institute of Atomic Energy; Chang Wen-yu, vice director of the Institute of Atomic Energy, Chinese Academy of Sciences, and chief of the Chinese delegation visiting LASL.

